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Two *Ropalospora* lichens new to mainland China

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Abstract —The genus *Ropalospora* is reported from mainland China for the first time; *R. chlorantha* is new to China, while *R. phaeoplaca* is new to mainland China.

Key Words —taxonomy, corticolous, fungi, *Ropalosporaceae*

Introduction

Ropalospora A. Massal., first described in 1860, belongs to the *Ropalosporaceae* (Kirk et al. 2008). The genus is characterized by black prothallus, dark brown to black lecideine apothecia, *Fuscidea*-type ascus, bacilliform conidia, and multiseptate ascospores (Ekman 1993, Brodo et al. 2001, Kantvilas 2004). *Ropalospora* includes six species worldwide: *R. chlorantha*, *R. hibernica* (P. James & Poelt) Tønsberg, *R. lugubris* (Sommerf.) Poelt, *R. phaeoplaca*, *R. rossii* Øvstedal, and *R. viridis* (Tønsberg) Tønsberg (Ekman 1993, 1996; Tønsberg 1993; Brodo et al. 2001; Øvstedal et al. 2001; Smith et al. 2009; Fryday & Coppins 2012).

In China, *Ropalospora phaeoplaca* has been reported only from Taiwan (Aptroot & Sparrius 2003). Here we present records of *R. phaeoplaca* and *R. chlorantha* from mainland China.

Materials & methods

The specimens studied are preserved in SDNU (Lichen Section of Botanical Herbarium, Shandong Normal University) and KUN-L (Lichen Section, Cryptogamic Herbarium of Kunming Institute of Botany, Academia Sinica). Morphological and anatomical characters were examined under a stereomicroscope (COIC XTL7045B2) and polarizing microscope (Olympus CX41). The lichen substances were identified using standardized thin layer chromatography techniques (TLC) with system C and microcrystal test (MCT) with GE solution (Orange et al. 2010). Photos of these lichens were taken under Olympus SZX16 and BX61 with DP72.

Taxonomic descriptions

Ropalospora chlorantha (Tuck.) S. Ekman, Bryologist 96: 586 (1993) Figs 1–2

Morphology — Thallus corticolous, crustose, pale brown, discrete or continuously verrucose areolate, thin, esorediate; prothallus black; medulla with obvious crystals that are soluble in K and C. Apothecia lecideine, sessile, 0.4–0.8 mm diam.; disc black, concave; margin black, often flexuous. Exciple externally brown, internally hyaline to straw-colored, without crystals; epihymenium brown to black; hymenium hyaline; hypothecium hyaline, with oil droplets. Asci clavate, 30–50-spored, *Fuscidea*-type; ascospores hyaline, needle-shaped, 3–5-septate, with one attenuate end, curved, 26–35 × 1–2 µm;

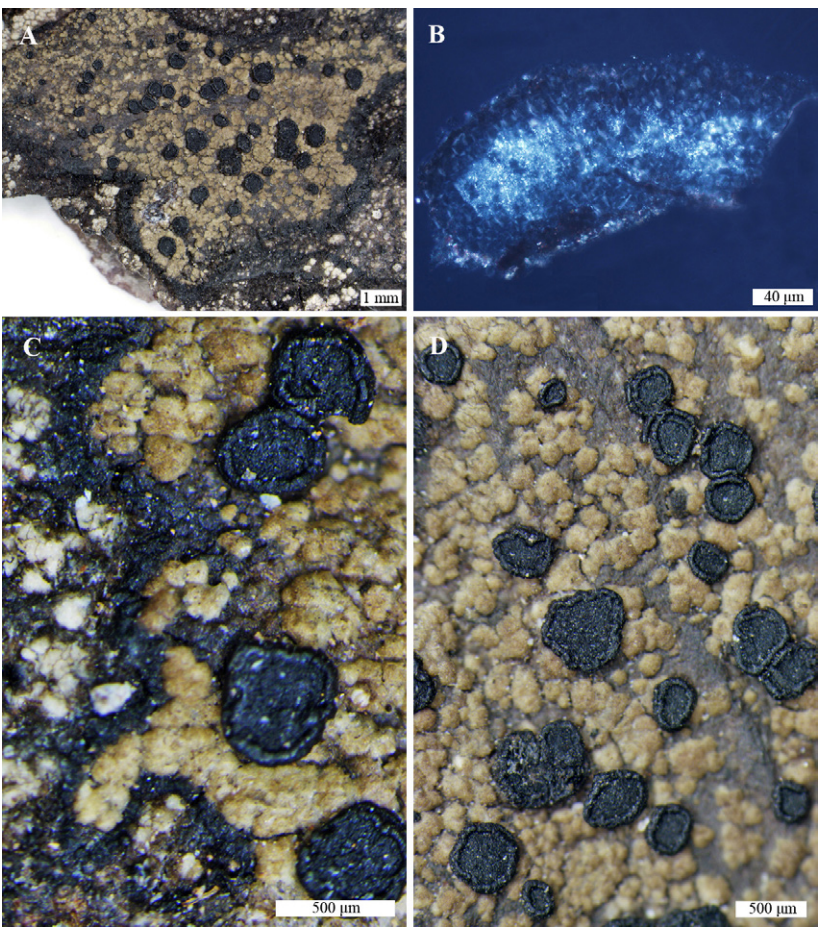

Fig. 1 ***Ropalospora chlorantha*** (20100315a, SDNU). A: Thallus; B: Crystals in thallus; C: Prothallus; D: Apothecia.

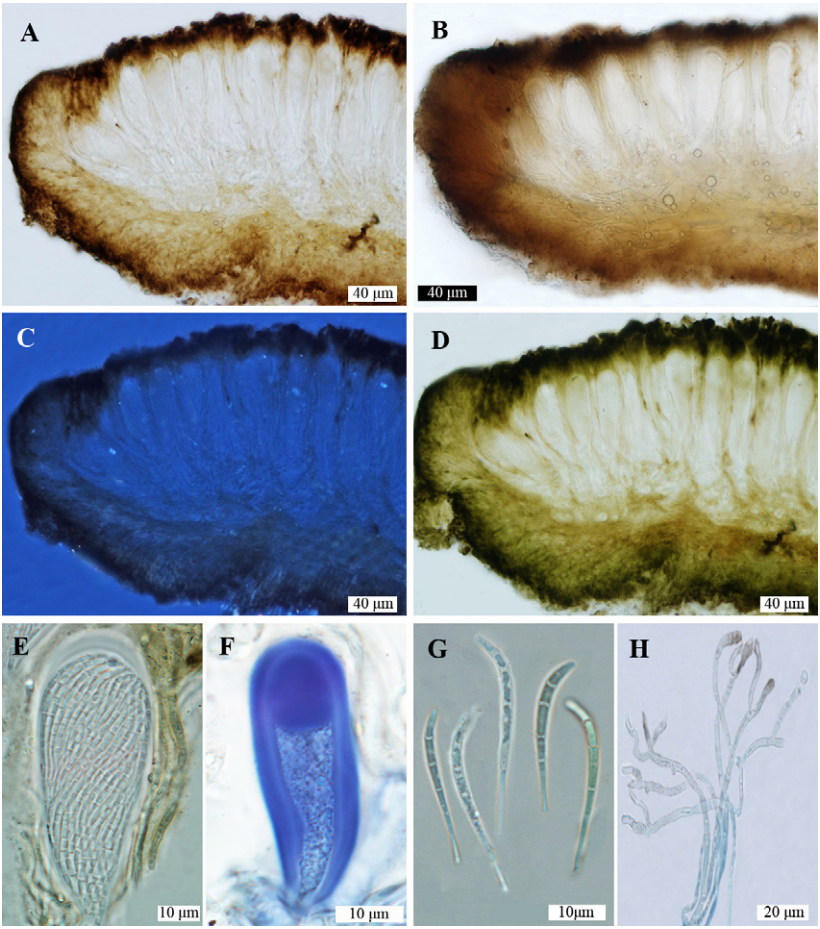

Fig. 2 ***Ropalospora chlorantha*** (20100315a, SDNU). A: Apothecium section; B: Apothecium section, showing oil droplets in hypothecium; C: Apothecium section, showing exciple without crystals; D: Apothecium section, showing K reaction (turning green) of epihymenium and outer exciple; E: Ascus and ascospores; F: Amyloid reaction of ascus; G: Ascospores; H: Paraphyses.

paraphysis 1.5–2.0 µm diam., branched in upper part and slightly thickened at top. Pycnidia not observed.

Chemistry — Thallus and medulla K–, C–, KC–, P–. Epihymenium and exciple K+ green, C–. No lichen substances detected by TLC or MCT.

Distribution — *Ropalospora chlorantha* has been reported from Canada, USA, and Bhutan (Ekman 1993, Aptroot & Feijen 2002). New to China.

Specimen examined: **CHINA**. **Yunnan**, Lijiang, Mt. Laojun, alt. 4000 m, on bark, 5 Nov 2009, Q. Tian 20100315a (SDNU).

Comments —*Ropalospora chlorantha* is characterized by the corticolous and esorediate thalli, the exciple without crystals, the >30-spored asci, and perlatolic acid. However, we detected no lichen substance in this specimen from China.

Ropalospora phaeoplaca (Zahlbr.) S. Ekman, Op. Bot. 127: 128 (1996) Figs 3–4

Morphology — Thallus corticolous, crustose, grayish-white, smooth to verrucose areolate, without soredia; prothallus not seen; medulla with obvious

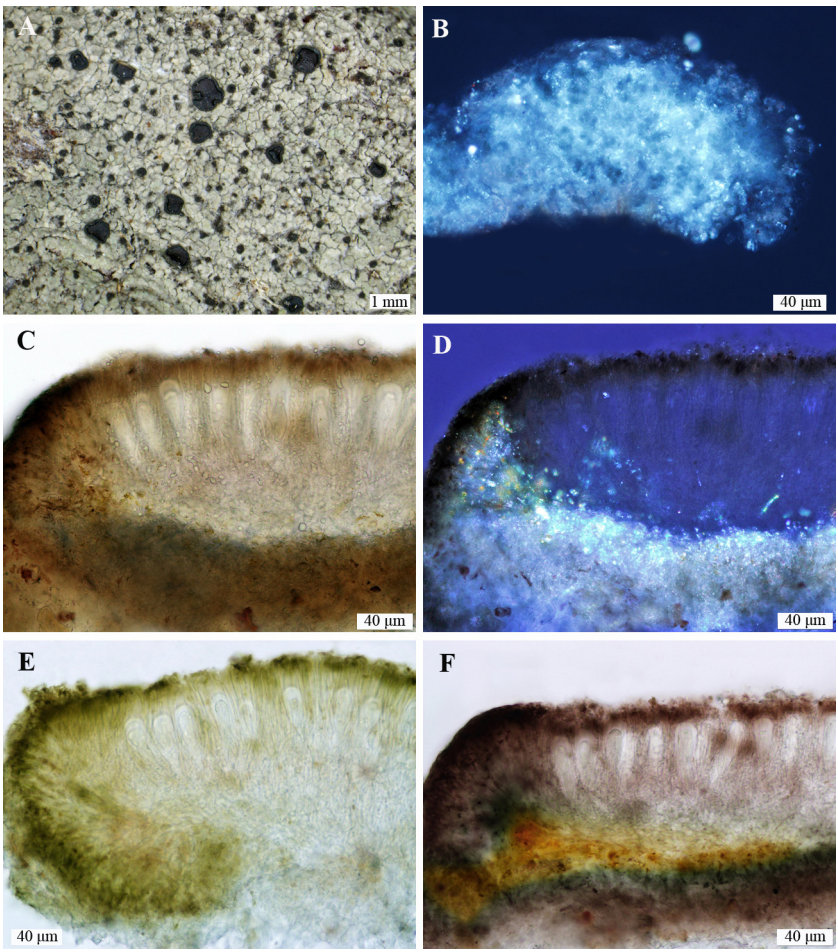

Fig. 3 ***Ropalospora phaeoplaca*** (20105161, SDNU). A: Thallus; B: Crystals in thallus; C: Apothecium section, showing oil droplets in apothecium; D: Apothecium section, showing exciple with crystals; E: Apothecium section, showing K reaction (turning green) of epihymenium and outer exciple; F: Apothecium section, showing C reaction (turning green, then purple) of epihymenium and outer exciple.

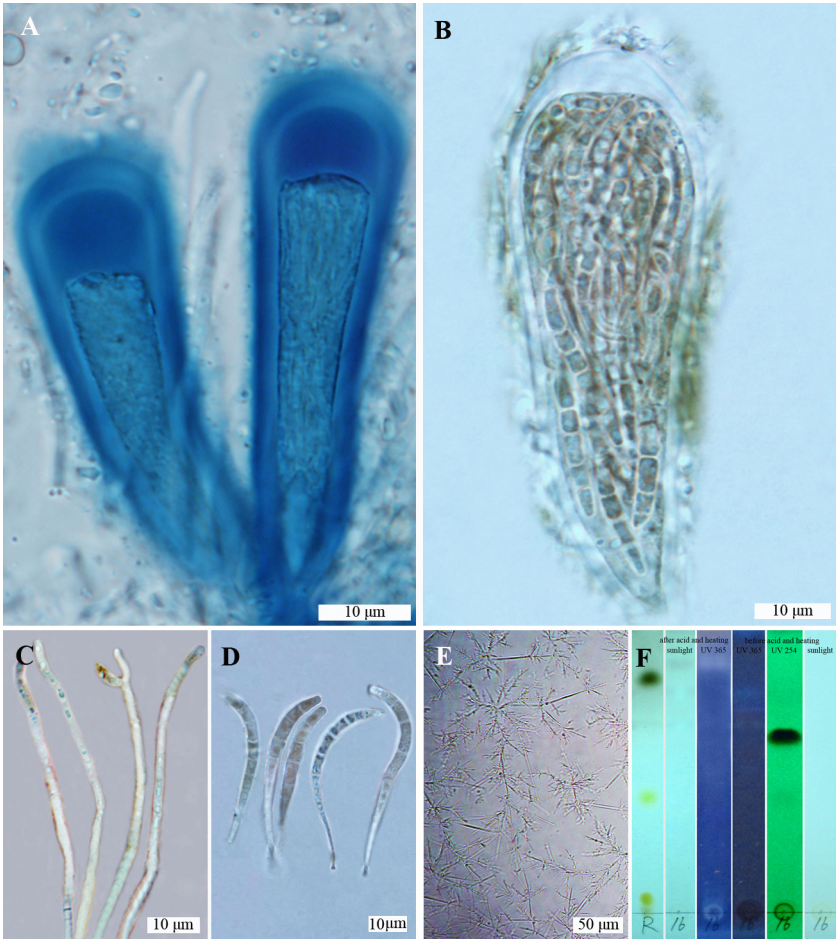

Fig. 4 ***Ropalospora phaeoplaca*** (20105161, SDNU). A: Amyloid reaction of asci; B: Ascus and ascospores; C: Paraphyses; D: Ascospores; E: MCT result (GE solution); F: TLC result (R = Reference).

crystals that are soluble in K and C. Apothecia lecideine, sessile, 0.4–0.9 mm diam.; disk black, slightly convex; margin black, smooth or flexuose. Exciple brown externally, inside pale brown to hyaline, with abundant crystals that are soluble in K and C; epihymenium brown; hymenium hyaline; hypothecium hyaline, with oil droplets. Asci clavate, 10–16-spored, *Fuscidea*-type; paraphysis simple, slightly branched at top; ascospores hyaline, needle-shaped, 5–6 (–8)-septate, with one attenuate end, curved, 30–47 × 2–3 µm. Pycnidia not observed.

Chemistry —Thallus and medulla K–, C–, KC–, P–. Epihymenium and outer exciple K+ green, C+ green then turn to purple. An unknown lichen substance was detected by TLC and MCT.

Distribution — *Ropalospora phaeoplaca* has been reported from Japan and Taiwan (Ekman 1996, Aptroot & Sparrius 2003). New to mainland China.

Specimens examined: **CHINA**. **Fujian**, Longyan, Mt. Huanglianyu, alt. 1400 m, on bark, 29 Oct, 2010, H.Y. Wang 20105161, X.R. Kou 20105920 (SDNU). **Guizhou**, Kaili, Mt. Leigong, alt. 1600 m, on bark, 23 Aug 2010, D.F. Jiang 20103297, Z.L. Huang 20103179, 20103155, 20103128, L.L. Zhang 20103148a, 20103148b (SDNU); Tongren, Mt. Fanjing, alt. 2000 m, on bark, 2 Nov 2009, Z.J. Ren 20128007 (SDNU). **Yunnan**, Chuxiong, Mt. Zixi, alt. 2100 m, on bark, 28 Aug 1994, L.S. Wang 94–15646 (HKAS).

Comments — *Ropalospora phaeoplaca* is closely related to *R. chlorantha*, but differs in having minute K-soluble crystals in the exciple and usually eight (occasionally ≤16) spores per ascus (Ekman 1996). The Chinese specimens have abundant K-soluble crystals in the exciple, 10–16-spored asci, and an unknown lichen substance.

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